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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/056,230
Filing Date: January 24, 2002
Appellant(s): SCHNITZER, JAN E.

Elizabeth Mata
For Appellant

EXAMINER'S ANSWER

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EXAMINER'S ANSWER

This is in response to the appeal brief filed November 18, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief states that Appellants, the undersigned Attorney and Assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by, or have a bearing, on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 3-5, 7-9 and 12-14. Claim 1 has been cancelled Claims 5-8 and 10-17 have been withdrawn from consideration as not directed to the elected invention.

(4) Status of Amendments After Final

The appellant's heading of "Status of Amendments" and the statement included are improper. The correct heading is "Status of Amendments After Final". No amendment after final has been filed

(5) Summary of Invention

The summary of invention contained in the brief is correct. However, in addition to the summary of the invention, the brief contains additional arguments not directed

to the summary of the invention.

(6) Issues

The appellant's statement of the issues in the brief is correct. However, the listing of the claims in the Issues section is incorrect since the claims on appeal are not claims 3-5, 7-9, 112-13, but rather are 3-5, 7-9, 12-14. It is noted that, as set forth below, the rejection under 35 USC 112, first paragraph drawn to whether it is possible to extrapolate the teachings in the specification regarding the uptake of the combination of Mab 833/drug to the enablement of the claims is withdrawn by the Examiner.

(7) Grouping of claims

Appellant's brief includes a statement that claims stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is substantially correct. In particular, a substantially correct copy of appealed claim 9 appears on page 10 of the brief which is the second page of the Appendix to the Appellant's brief. The minor errors are as follows:

Claim 9 is presented on page 2 of the Appendix as originally filed. However, claim 9 was amended, in the preliminary amendment filed June 2, 2003, to read as follows:

9. (Amended) The method of claim 4, wherein the transport agent component binds to and localizes to a molecule present on the luminal surface of caveolae of the luminal surface of the vascular endothelium.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Winkler et al (UCLA Symposia on Molecular and Cellular Biology, New Series (1990(, 122 (Mol Evol.), 29-50)

Elola et al (Acta Bioquimica Clinica Latinoamericano, 2000, 34(3)293-330)

(10) Grounds of Rejection

(Issue 1) The rejection of claims 3-5, 79, 12-14 under 35 USC 112, first paragraph set forth in the prior Office action mailed August 8, 2003, Section 6, pages 4-9 and maintained in the paper mailed February 26, 2004, Section 4, pages 2-4 is hereby withdrawn.

(Issue 2) Claims 3-5, 7, 8, 9, 12-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while enabling for a method of delivering an agent of interest comprising Mab 833 across a luminal surface of vascular endothelium from one side of an underlying cell to another side by binding to a component of caveolae on the luminal surface of the vascular endothelium does not reasonably provide enablement for a method of delivering any agent of interest across a luminal surface of vascular endothelium from one side of an underlying cell to another side in a tissue specific manner by binding to a component of caveolae on the luminal surface of the vascular endothelium in a tissue. This rejection is set forth in the prior Office action mailed August 8, 2003, Section 7, pages 9-13 and maintained in the paper mailed February 26, 2004, Section 5, pages 4-6.

As stated therein the specification teaches and exemplifies a rat lung-, microvessel-, and caveolae specific monoclonal antibody, Mab 833, which targets rat lung *in vivo* (p. 49), which targets a 90 kDa rat lung component of caveolae. The specification states that the concept of vascular targeting has evolved in the last 20 years from the failure of many directed therapies to reach their intended target cells (p. 51). Although many attempts have been made to identify tissue-specific targets on vascular endothelium and to develop tissue-specific probes for vascular targeting, directed delivery *in vivo* has still not met theoretical expectations (para bridging pages 51-52).

However, these teachings are not considered enabling for the broadly claimed invention because the identification of Mab 833 as a rat lung specific binder to a rat lung specific component of caveolae was a hoped for but unexpected event. The discovery was unexpected because in 20 years of research by the combined efforts of those skilled in the art, this type of effective specificity had not been previously attained. Given the unexpected nature of the Mab 833 discovery, the identification of Mab 833 would not lead to other agents without undue experimentation. The discovery of Mab 833 does not teach how to predictably distinguish any other tissue specific caveolae components from caveolae that are not tissue specific.

Further, the teaching of the single caveolae specific 90 kDa rat lung antigen does not predictably enable the broadly claimed invention since there is no teaching of any other tissue specific component that can be found in any species or tissues other than rat lung and even if species homologs of the rat lung caveolae component exist, given the teachings of Elola et al and Winkler et al, both of record, who teach that species homologs are divergent in amino acid sequence, one

from the other it could not be predicted whether or not the species homologues would be tissue specific.

(Issue 3) Claims 3-5, 7, 8, 9, 12-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The written description in this case only sets forth a method of delivering an agent of interest comprising Mab 833 across a luminal surface of vascular endothelium from one side of an underlying cell to another side by binding to a component of caveolae, a 90 kDa antigen, on the luminal surface of the vascular endothelium and therefore the written description is not commensurate in scope with the claims drawn to a method of delivering any agent of interest across a luminal surface of vascular endothelium from one side of an underlying cell to another side in a tissue specific manner by binding to any component of caveolae on the luminal surface of the vascular endothelium in a tissue. This rejection is set forth in the prior Office action mailed August 8, 2003, Section 8, pages 13-16 and maintained in the paper mailed February 26, 2004, Section 6, pages 6-7.

As stated therein, the specification teaches the development of a single monoclonal antibody, Mab 833, that selectively and specifically targets a 90kDa component of rat lung caveolae presented on the luminal surface of rat lung vascular endothelium (p. 49).

The instant invention fails to meet the Written Description standards because the specification describes the broadly claimed agent of interest and the broadly claimed target of the agent of interest only by function – that is that the

target is a tissue-specific component of caveolae and that the agent of interest binds to said target. The specification fails to provide sufficient descriptive information, fails to describe conserved regions which are critical to the structure and function of the genus claimed, fails to provide a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus, fails to provide a description of the conserved regions which are critical to the structure and function of the genus claimed, fails to describe the sites at which tissue specific antigens to which the agent of interest might bind are found, fails to provide information regarding the relation of structure to function of the agent of interest, fails to provide a representative number of agents of interest or tissue specific caveolae components falling within the scope of the genus. Since the disclosure fails to describe the common attributes or characteristics that identify the members of the genus and because the genus is highly variant, the disclosure of a single specific agent of interest and the ability to screen, as taught in the specification is insufficient to describe the genus.

(11) Response to Argument

(Issue 1') Response to arguments drawn to rejection of the claims under 35 USC 112, first paragraph in the paper mailed August 8, 2003, Section 6, pages 4-9 and maintained in the paper mailed February 26, 2004, Section 4, pages 2-4.

Appellant's arguments are moot since the rejection has been withdrawn.

(Issue 2') Response to arguments drawn to rejection of the claims under 35 USC 112, first paragraph in the paper mailed August 8, 2003, Section 7, pages 9-13 and maintained in the paper mailed February 26, 2004, Section 5, pages 4-6.

Appellant argues on page 6 that the identification of Mab 833 is not an

unexpected event and that the identification of Mab 833 exemplifies the methods that one of ordinary skill in the art can utilize to identify other tissue-specific antibodies and the specification details how to test antibodies or other agents for such specificity and there is sufficient evidence in the specification to guide one of ordinary skill in the art as to how to identify such an antibody or agent. Thus, one of ordinary skill in the art, using no more than routine experimentation would be able to apply the methods of the invention to other antibodies or agents of interest which bind and localize to components of the caveolae for tissue-specific targeting agents.

However, as previously set forth the specification teaches only a single tissue specific caveolae component which is the 90kDa rat lung antigen to which Mab833 binds. Contrary to Appellants arguments, the identification of Mab 833 is an unexpected event because the specification teaches that 20 years of research by the combined efforts of those skilled in the art were unable to produce a single effective tissue-specific vascular target and the finding of this single rat lung specific caveolae component does not predictably enable the broadly claimed invention.

Further, contrary to Applicant's arguments, the teaching of how to identify other tissue-specific antibodies and how to test antibodies or other agents for caveolae tissue specificity does not meet the standard of 35 USC 112, first paragraph which requires not that the specification teach how to identify and test agents, but rather requires that the specification teach how to make and use the claimed invention. In the absence of guidance or exemplification drawn to other tissue specific caveolae binding agents that would provide guidance to the skilled artisan so that the targeting moiety for the broadly claimed invention could be

predictably made, the screening assays taught are drawn to random experimentation which is undue.

Appellant further argues on page 6 that the specification does not teach, on pages 51-52, that undue experimentation is necessary, rather, it indicates that the inventor has achieved a breakthrough that now renders the claimed invention well within the grasp of one of ordinary skill in the art wherein Appellant has for the first time demonstrated successful delivery of agents, by targeting caveolae to overcome the endothelial cell barrier for access to underlying tissues/cells. The proof of principle allows one of ordinary skill in the art to achieve delivery of agents of interest by targeting caveolae in the manner described in the specification.

However, although Appellant has demonstrated a "proof of principle", contrary to Appellant's arguments Appellant's breakthrough does not render the claimed invention well within the grasp of one of ordinary skill in the art because Appellants breakthrough is drawn only to the single caveolae specific antigen and Mab 833 which binds to that antigen as disclosed in the specification. The specification does not teach how to extrapolate this breakthrough to the broadly claimed invention because the specification does not provide information that could be used to predictably distinguish tissue specific caveolae components from caveolae components that are not tissue specific and the screening assays taught in the specification for identification and testing of tissue specific caveolae components do not meet the standard of 35 USC 112, first paragraph because they do not teach how to make the claimed invention.

(Issue 3') Response to arguments drawn to rejection of the claims under 35 USC 112, first paragraph in the paper mailed August 8, 2003, Section 8, pages 13-16

and maintained in the paper mailed February 26, 2004, Section 6, pages 6-7.

Appellant argues that the specification provides the relevant features of the agent of interest that are sufficient to distinguish it from other materials in that the agent must bind to a component of caveolae of the luminal surface of vascular endothelium and argues further that the actual antigen need not be identified nor need the structure of the antigen be described provided that the antibody have the relevant characteristic, that is binding to a component of caveolae of the luminal surface of the vascular endothelium, in a tissue specific manner which is a characteristic that is sufficient to distinguish the claimed material from other material.

However, the function of binding to a component of caveolae of the luminal surface of the vascular endothelium, in a tissue specific manner is not sufficient to distinguish the claimed material from other material. As previously set forth, the court found in the *University of California v Eli Lilly* decision that naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material. Further, as previously set forth, the court found in the *University of California v Eli Lilly* decision that a definition by function does not suffice to define the genus because it is only an indication of what the genus does rather than what it is. Applying the same logic to the instantly claimed invention, other than Mab 833 and the 90 kDa antigen, the essential agent of interest and the antigen to which it binds are defined only by function, that is that the agent of interest binds to a tissue specific component of caveolae of the luminal surface of rat lung vascular endothelium.

Appellant argues that one of ordinary skill in the art is able to determine the components of the luminal surface of vascular endothelium, that is whether an

antigen has the relevant characteristic of being a component of caveolae of the luminal surface of vascular endothelium in a tissue specific manner by using the screening methods described in the specification.

However, the screening methods taught in the specification do not meet the required standards for Written Description under 35 USC, 112, first paragraph. The specification teaches the repeated unsuccessful attempts to screen for and identify tissue specific targets on vascular endothelium as well as the repeated unsuccessful attempts to screen for and develop tissue-specific probes. The specification clearly teaches the novel nature of the discovery of the instant tissue specific Mab 833 and its tissue specific 90 kDa antigen. In the absence of any teaching of any other compounds or antigens that can be used in the claimed methods, the teaching of screening assays does not place the claimed invention in Appellant's possession or convey to one skilled in the art that Appellant was in possession of the claimed invention at the time the instant application was filed.

The specification could meet the required Written Description standards, for example, by providing a precise definition of either the broadly claimed agents of interest or the antigens to which they bind in order to provide the tissue-specificity required by the claimed invention, by providing a description of the sites at which tissue specific caveolae are found. The specification could meet those standards, for example by providing structural features common to the members of the genus, which features constitute a substantial portion of the genus. The specification could meet those standards, for example by providing information regarding the relation of structure and function. However, the specification does not provide a precise definition of either the broadly claimed agents of interest or the antigens to which they bind in order to provide the tissue-specificity required by the claimed

invention, does not provide a description of the sites at which tissue specific caveolae are found, does not provide structural features common to the members of the genus, which features constitute a substantial portion of the genus, does not provide information regarding the relation of structure and function. Thus, the specification does not the satisfy the requirements of 35 USC 112, first paragraph drawn to Written Description.

Appellant argues that the specification describes the making and identification of a representative agent of interest that binds to and localizes to a component of caveolae and is tissue specific and given these teachings one would be able to identify similar agents.

However, the disclosure of the single agent of interest that binds to and localizes to a single component of caveolae and is tissue specific does not provide a representative number of species that fall within the scope of the invention that would satisfy the requirements of 35 USC 112, first paragraph drawn to Written Description. Although one would be able to identify agents of interest that bind to the known, caveolae lung tissue specific 90 kDa antigen, the recitation of the single antigen and antibody which binds that antigen does not provide sufficient descriptive information drawn to the structure and function of the broadly claimed and undefined agents of interest which bind to an unidentified antigens on unidentified tissues. Because the specification lacks written description of the broadly claimed agents of interest and antigens to which they bind, one would be able to predictably identify similar agents.

Therefore, for reasons set forth above, Appellants argument[redacted] and carefully considered, but are not considered sufficient t

case of lack of enablement and lack of written description and it is believed that the rejections should be sustained.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Susan Ungar

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Primary Examiner
February 2, 2005

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